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ABSTRACT

The study demonstrates: (1) the occurrence of verbal mediation with its facilitory effect, and (2) the interfering effect of verbal satiation on mediational processes in a three-state chaining paradigm. 40 preschool children were randomly assigned to either a control (no satiation) or an experimental (satiation) group. The subjects in the control group learned three lists of three stimulus response pairs. The stimuli consisted of eight cards, five of which were black outlined drawings of either a car, boat, tree, dog or cat, and three had either blue, yellow, or red squares. Two of the pairs were mediated, the third was non-mediated. The experimental group learned the first two lists, then prior to learning the third list, they repeated the B term continually for 30 seconds. A two by three analysis of variation performed on the number of errors to criterion on list three, revealed a significant interaction of the between groups factor (experimental or control) and the within stimulus factor. No other terms reached significance. (author/MC)

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Verbal Mediation and Satiation in Young Children [1,2*]

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Until recently, investigation of verbal learning processes in young children have been rare and controversy concerning the existence of verbal mediational processes in these children abound. (See Goulet, 1968) In an attempt to deal with the controversy there is a need for experimentation on facilitation as well as interference in mediational processes in preschool children.

Verbal mediation in four-year old children using a three-stage chaining paradigm (A-B, B-C, A-C) and experimentally acquired links, has recently been demonstrated by Boat and Clifton (1968). Their results indicate that mediation does occur in young children and are in contrast to Reese's (1962) "mediational deficiency hypothesis," and Flavell, Beach, & Chinsky's (1966) "production deficiency hypothesis."

From another line of investigation, the phenomenon of verbal satiation has been subject to increasing experimentation. Jakobovits & Lambert (1962) using adults as subjects in a mediation paradigm similar to the one used by McGehee and Schulz (1962), demonstrated that the continued repetition of an inferred mediating term (C), in the B-C-D chain reduces the ordinarily obtained facilitory effect in learning A-D, subsequent to A-B learning.

By using a satiation treatment on an experimentally acquired verbal mediator, in a three-stage chaining paradigm, the present experiment attempted to demonstrate the occurrence of both verbal mediation with its facilitory effect, and the interfering effect of verbal satiation in young children.

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CG005 187

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METHOD

Subjects: The Ss were forty boys and girls, aged 53 months to 65 months with a mean age of 59.6 months. Ss IQ's on the Stanford-Binet ranged from 87 to 149 with a mean of 111.7. S's were balanced for sex and randomly assigned to either an experimental (satiation), or a control (no satiation) group.

Design: The design of the present study parallels that of Boat and Clifton (1968) in its use of the chaining paradigm, and Jakobovits & Lambert (1962) in its use of the satiation treatment on the mediator. Each S was run individually, learning three lists of three S-R pairs through a modified paired-associate method. The stimulus and response terms were randomly paired resulting in 3 lists of essentially unassociated pairs (see Table 1). In two of the 3 sets of pairs the second list pair functioned as the mediating pair (A-B, B-C, A-C). In the third set of pairs the second list pair functioned as a control, non-mediating pair (A-B, D-C, A-C).

Insert Table I about here

All Ss learned the 3 lists to a criterion of nine consecutive correct responses. The Ss in the experimental group first learned List 1, which established A-B connections between the three A terms - a patch of color (blue, red and yellow) and the three B terms - the name of an object ("car," "boat," and "house"). List 2 learning followed, which established the B-C and D-C connections. The B term in List 2 for the two mediating pairs was a drawing of the same objects (car and boat) that were "named" as the B term in List 1, the C term for these two pairs was the name of a different object ("table" and "cup") The D term for the non-mediated pair was a drawing of a different object (tree), and the C term for this pair was the name of an object ("hat"). S were then asked to repeat continually for 30 seconds one of the B mediating terms. Half of the Ss in the experimental group were satiated on the B term of one of the mediating pairs ("car") the other half on the B term ("boat") of the other

mediating pair. This resulted for each S, in satiation of a mediator that was relevant to one of the A-C mediating pairs, and irrelevant to the other A-C mediating pair. The experimental group then proceeded to List 3, the A-C test list. The control group received the identical List 1, List 2 and List 3 pairs, but did not undergo satiation treatment.

Apparatus: The stimuli consisted of eight 5" by 5" white cards. On each of five of the cards was a black inked outline drawing of either a car, a boat, a tree, a dog, or a cat, and the three remaining cards had 3" by 3" squares of either blue, red, or yellow paper centered on them. The eight cards were placed in translucent plastic folders, 8" by 10" for presentation to each S. The drawings of the cat and dog were used only in the familiarization phase. Ss received a raisin for every correct response made while learning List 1, 2, and 3. Paper containers were available to collect the raisins each S won.

Procedure: E sat at a small table facing the S and explained that he was going to show S a picture or color, and for every correct guess a raisin would be placed in his paper container which he could eat after the game. S was told not to name the object or color in the picture, but instead to guess the word that went with each picture or color. The familiarization phase began and E showed S the picture of a dog and asked S to guess what word went with it. Obviously S responded incorrectly on the first trial, whereupon E said: "Wrong, the word that goes with the picture of a dog is telephone." E then showed S the picture of a dog again, and asked S what word went with it. If S said "telephone" E said "right, you won a raisin" and put a raisin in S's paper container. If S responded incorrectly, E continued correcting him until S made the correct response, "telephone." This familiarization procedure was repeated for all Ss with the picture of a cat paired with the word spoon. After S had correctly responded to both practice pictures E proceeded to the main part of the experiment.

E presented Lists 1, 2, and 3 to all Ss in the same manner as the practice pictures, giving S complete knowledge of results. S was negatively reinforced for incorrect responses by E responding "wrong, the word that goes with_____ is _____," and positively reinforced for correct responses by E responding "right, you won a raisin" and placing a raisin in S's cup. After S reached criterion of 9 consecutive correct responses, E presented List 2 in the same manner showing S the picture of a car, a boat, and a tree. After List 2 learning Ss in the experimental group received the satiation treatment and were asked to repeat continually, for 30 seconds either the word "car" or "boat" depending on the subgroup S was in. Ss then were presented with List 3, the test list, in the same manner as the previous two lists. The control group had a one minute rest in lieu of satiation.

Throughout the experiment E recorded the responses S made to each stimulus, the latency to the nearest tenth of a second for the first 9 responses in list 3, and the number of repetitions made by each S in the experimental group during satiation.

RESULTS

Lists 1 and 2 Acquisition. In order to determine the comparability of the experimental and control groups on List 1 and 2 acquisition, two one way analyses of variance were performed on the number of trials to criterion. These analyses did not yield any statistically significant terms (p's $> .25$). The mean number correct to criterion on List 1 was 13.3 and 14.2 and on List 2 13.8 and 14.5 for the experimental and control groups respectively.

Insert Table II about here

List 3 (test list) Acquisition. A 2 x 3 analysis of variance was performed on the number of errors to criterion to test the predictions regarding the effect of mediation and satiation. The factors were a) satiated (experimental) or non-satiated (control) and b) the within S factor, either the mediated satiated (relevant) pair, the mediated non-satiated (irrelevant) pair or the non-mediated

pair. This analysis as expected yielded no significant main effects, only a statistically significant interaction, F (2,76)=7.01, $p < .01$.

A Newman-Keuls test of specific comparisons indicated that 1) the mean error score of the control group for both mediated pairs was significantly lower ($p < .01$) than their mean errors on the non-mediated pair, thus indicating that mediated facilitation occurred, 2) the mean error score of the experimental group for the mediated relevant satiated pair was significantly higher ($p < .01$) than the mean error scores of both the mediated and non-mediated pairs of the experimental group, thus supporting the prediction that satiation of a mediating term produces interference; and 3) the mean error score for the mediated irrelevant satiated pair of the experimental group was significantly higher ($p < .01$) than both means of the mediated pairs of the control groups, and the mean of the non-mediated pair of the experimental group. The third finding suggests that something like "generalization" of satiation was operating since on this pair, where the specific acquired mediator did not undergo the satiation treatment, Ss's performance also showed an increase in errors.

An unexpected and unexplainable result occurred with the non-mediated pair: Ss in the experimental group made significantly fewer errors ($p < .01$) than Ss in the control group.

DISCUSSION

The results of this study provide supporting evidence for the existence of 1) verbal mediational ability in preschool children, and 2) interference in this mediational ability as a result of continued repetition of the acquired mediator. The data indicate that young children's learning is facilitated in a 3 stage chaining paradigm (A-B, B-C, A-C) as a result of the acquired mediating connection B, in the A-B-C chain, and that the continued repetition of the B term prior to A-C learning interferes with the facilitory effect of the acquired mediational connection.

The results obtained on List 3 learning for the control group demonstrated that Ss performed better on the two mediated pairs than on the non-mediated pairs, thus providing a replication of Boat & Clifton's (1968) finding of a positive transfer effect in a mediation paradigm. As such, these results need little comment other than echoing doubt as to the validity of the "mediational deficiency hypothesis" and its sidekick the "production deficiency hypothesis," especially as these hypotheses in their distinctive way imply the lack of verbal mediational ability in young children. The paradigm and task used in the present study required that the child (if were to "mediate") "somehow produce" the mediator he acquired in the task. The assumption is made that Ss did "produce" the mediator, since their performance was facilitated in learning the pairs that involved mediated chaining. The present data contradict the above simplified explanations which have been generated to explain young children's supposed inability to mediate or use verbal mediating responses.

The second finding, that satiation of the acquired mediator produced significantly less positive transfer in the mediation paradigm, needs further comment. Keeping in mind that "relevant satiated" and "irrelevant satiated" refers to the satiation of the specific mediating "B" link, or the satiation of a word which is not the specific mediating link, the data obtained on List 3 learning for the experimental group revealed that performance on the irrelevant satiated mediated pair was significantly better than performance on the relevant satiated mediated pair. This, coupled with the differential performance of the experimental group vs. the control group on the mediated relevant satiated compared with the mediated irrelevant satiated pairs support Jakobovits & Lambert's (1962) finding that significantly less facilitation is obtained when the mediated term is satiated. Jakobovits & Lambert (1962, p. 350) propose two possible mechanisms which might be operating to explain their results: "One is that the availability of the mediator is reduced, making the completion

of the mediation sequence B-C-D less probable; the other is that, given the assumption (see Staats, 1961) that some of the mediation reactions in the mediator C are also involved in B and D, the inhibition process might generalize to these two terms as well." They then go on to interpret semantic satiation as a "cognitive form of reactive inhibition." Though the present study differs in several respects from that of Jakobovits & Lambert (1962), we find it rather difficult on empirical and logical grounds to accept their view of semantic satiation as a form of "cognitive reactive inhibition." Their explanation is tautological. Even though our study involved repetition of an "acquired" mediator and we obtained interference (as did Jakobovits & Lambert with an "inferred" mediator) of the ordinarily expected facilitory effect in a 3 stage chaining paradigm, explication at this point of an underlying mechansim that "caused" the hypothesized mediator to become "less available" is premature. Neither the present study nor Jakobovits & Lambert's (1962) attempted to test directly any underlying mechanism.

Similarly, the results of the present study cast doubt on the credibility of a learning interpretation (Kanungo, 1962), which hypothesizes that subsequent to repetition the repeated word first becomes associated with itself, such that a word-word (S-S) verbal connection is built up and secondly, the original meaning response undergoes extinction. In the present study, examination of the specific error responses of Ss in the experimental group clearly revealed that the satiated word was <u>not</u> evoked as a response to the List 3 stimulus word, and therefore does not support the learning interpretation which would posit intrusion of the satiated word in List 3 errors. Further questions arise in terms of the learning interpretation when we examine the differences that exist between the mediated pairs in which the satiated mediator was relevant in contrast to those in which the satiated term was irrelevant.

In part the present data suggest that the interfering effect of satiation obtained when the satiated mediator was relevant and specific to one of the mediating pairs has a non-specific interfering effect which "generalized" to the other mediated pair in which the satiated word was "irrelevant" to the specific acquired mediating link. This tends to support an attentional response interpretation which can be referred to as an orienting response habituation interpretation (Das, 1964). This interpretation views the effect produced by continued repetition as due to the habituation of the orienting reflex, with its resultant decrement in attention. Clearly none of the aforementioned interpretations can be considered as tested in the present study, but certainly the inhibitory nature of satiation exists and should continue to be explored, with the hope that further data might reveal more about the underlying mechanism.

The logical extension of results of experimentation on verbal mediation and satiation in young children may be valuable in adding to our understanding of the variety of phenomena involving mediational processes such as transposition, reversal and non-reversal shifts, concept formation, word meaning, the effectiveness of verbal stimuli, and the role that verbal cues play in discrimination and generalization.

References

Boat, B.M., & Clifton, C. Verbal mediation in four-year old children. Child Development, 1968, 39, 505-514

Das, J.P. Semantic satiation: an experiment and theory. Papers in Human Development, unpublished manuscript, George Peabody College, Nashville, Tenn., 1964, 2, No. 5.

Flavell, J.H., Beach, D.H., & Chinsky, J.M. Spontaneous verbal rehersal in a memory task as a function of age. Child Development, 1966, 37, 283-299.

Goulet, L.R. Verbal learning in children: Implications for developmental research. Psychological Review, 1968, 69, 359-376.

Jakobovits, L.A. & Lambert, W.E. Mediated satiation in verbal transfer. Journal of Experimental Psychology, 1962, 64, 346-351.

Kanungo, R.N. Semantic satiation and verbal learning. Journal of Special Education, 1967, 2, 45-49.

McGehee, N.E., & Schulz, R.W. Mediation in paired-associate learning. Journal of Experimental Psychology, 1962, 62, 565-570.

Reese, H.W. Verbal mediation as a function of age level. Psychological Bulletin, 1962, 59, 502-509.

Staats, A.W. Verbal habit-families, concepts, and the operant conditioning of word classes. Psychological Review, 1961, 68, 190-204.

TABLE I

Illustration of the Design*

List 1	List 2	List 3
1. (A-B) blue - "car"	(B-C) a car - "table"	(A-C) blue - "table"
2. (A-B) red - "boat"	(B-C) a boat - "cup"	(A-C) red - "cup"
3. (A-B) yellow-"house"	(D-C) a tree - "hat"	(A-C) yellow - "hat"

*Note: Pairs 1 and 2 are mediated A-B, B-C, A-C, whereas pair 3 is non-mediated A-B, D-C, A-C. The experimental group underwent satiation of "car" or "boat" subsequent to List 2.

TABLE II

Mean Errors on List 3*

	Condition	Group C	Group E
1. (A-B, B-C, A-C)	Mediated	1.85 (a)	3.20 (d)
2. (A-B, B-C, A-C)	Mediated	2.25 (b)	2.45 (e)
3. (A-B, D-C, A-C)	Non-mediated	2.70 (c)	2.15 (f)

*Note.- For the experimental group, pair 1 involved a relevant satiated mediator, and pair 2 involved the irrelevant satiated mediator. Newman-Kuels test ($p < .01$) indicated that a, b, and f were significantly lower than c, d, e; c was significantly lower than d; and e was significantly lower than c and d.